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ABSTRACT

An evaluation model is presented for educational decision makers with evaluation defined as "the process of ascertaining the decision areas of concern, selecting appropriate information, and collecting and analyzing information in order to report summary data useful to decision-makers in selecting among alternatives." Areas in special need of evaluation include systems assessment of the range and specificity of educational objectives, program planning, program implementation, program improvement, and program certification or generalizability to other situations. Two feedback loops are explained to distinguish particular evaluation and decision elements for educational systems and instructional programs. This model is compared with the Corrigan-Kaufman six-step problem-solving model. (JK)

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A MODEL FOR EDUCATIONAL EVALUATION

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at

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U.S. DEPARTMENT OF HEALTH, EDUCATION & WELFARE
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A MODEL FOR EDUCATIONAL EVALUATION

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This paper attempts to discuss a basic model for the evaluation of educational systems and instructional programs. The assumptions leading to the development of a comprehensive definition of evaluation and the definition itself will be presented. A discussion of this definition leads to the description of a decision-oriented model for educational evaluation. This model is compared briefly with the Corrigan-Kaufman Six-Step Problem Solving Model. The paper concludes with a discussion of the current research activities of the Center for the Study of Evaluation in regard to their relation to the basic evaluation model.

INTRODUCTION

Inherent in the development of a model of educational evaluation is the development of a theory of evaluation. The development of such a theory of evaluation has been established as the major goal of the Center for the Study of Evaluation. At their best the propositions presented in a theory of evaluation should enable one to predict, fully, the appropriateness of utilizing various evaluation strategies within a system. It is granted that what has been developed is not an evaluation theory but rather a conceptual framework. What is presented in this paper represents months of conceptual efforts and may be thought of as a first approximation of an attempt to develop an evaluation theory. In other words, a rationale has been constructed for conducting evaluations in a certain way that is based on a specified set of assumptions which in turn underlie a precise definition of what an evaluation is supposed to be. Development of an evaluation theory is thus and "end" rather than a means, guiding the research activities of the Center for the Study of Evaluation.

The definition of evaluation presented here is based on the following assumptions:

1. Evaluation is a process of gathering information. Most past definitions of evaluation are inadequate since they do not cover the full range of activities requiring information.

2. The information collected in an evaluation will be used mainly to make decisions about alternative courses of action, rather than being employed in some other fashion. Thus, the manner in which the information is collected, as well as the analysis procedures, must be appropriate to the needs of the decision-maker or of potential decision-involved publics. This requirement might necessitate quite different analyses than that which might be employed if the purpose were understanding the education process per se.

3. Evaluation information should be presented to the decision-maker in a form that he can use effectively and which is designed to help rather than confuse or mislead him.

4. Different kinds of decisions may require different kinds of evaluation procedures.

These assumptions have led us to a broader more comprehensive definition of evaluation. Past definitions of evaluation have either equated it with: (1) measurement and testing, (2) statements of congruence between performance and objectives, or (3) professional judgments. None of these definitions by itself is sufficient to provide all the necessary information or to include the multiplicity of activities now regarded as evaluation.

The Center feels an expanded view of evaluation is necessary in order to take into consideration the idea that the judgments from evaluators are intended to be of use to decision-makers in their process of selecting between various courses of action. This view of evaluation also acknowledges the uniqueness of specific situations or programs and the necessity of recognizing this uniqueness in the evaluation as well as in the manner in which the evaluation information is ultimately reported. While there are any number of variations of a specific wording that might serve equally well for a definition of evaluation, one has been devised which fits the Center's conceptions of evaluation and meets its biases. We would maintain that evaluation must take into consideration the ultimate decision-making functions to be served, as well as the nature of the specific problem or situation under analysis. The following definition is preferred:

> Evaluation is the process of ascertaining the decision areas of concern, selecting appropriate information, and collecting and analyzing information in order to report summary data useful to decision-makers in selecting among alternatives.

The first part of the definition of evaluation presented here deals with ascertaining the decision areas of concern. The decision-maker, and not the evaluator, determines the nature of the domain to be examined. The evaluator can and should, however, point out inconsistencies, potential difficulties, or additional data that might modify the decision-maker's views on the relevance of certain concerns.

For example, if the evaluator is called upon by a specific decision-maker to provide an evaluation, he will first want to know what should be evaluated. Decision areas of concern may be stated relative to explicit statements of goals or objectives of the system or relative to various implicit goals. In his interactions with the decision-maker, the evaluator may wish to point out the necessity for broadening the area of concern because of interrelated aspects of the school program, or to consider, as well, various areas of potential unanticipated outcomes.

On the other hand, if the evaluator is conducting an evaluative study of an educational institution without having been commissioned by a specific decision-maker, he has available greater flexibility. A principal, for example, might make a decision on his own to conduct an evaluative study of his school. There is a preconception on the part of the evaluator as to which decision-maker or

potential decision groups he is directing his work towards. Thus, the decision area of concern in such an endeavor is framed by the unique nature of the potential decision-maker or decision groups along with either actual data or judgments on the part of the evaluator as to the concerns of this group (individual).

The Center considers this "preconception of decision-maker" notion a fundamental and useful distinction between evaluation and some kinds of research. If one realizes that the purpose of what he does is to provide the best possible basis for informed judgments or decisions, his thinking about his task will surely be influenced; and this will be a different influence than that which operates on the researcher whose purpose is to discover or explain some phenomenon.

Another part of the definition and, therefore, another task of evaluation, deals with selecting appropriate information in light of the decision areas to be considered. If the decision area relates to the assessment of the needs of a total system, the information requirements will be quite different than when the decision area is related to the relative success of two specific alternative programs conducted under experimental conditions. The task of evaluator in specifying information requirements includes the development of the evaluation design of the project, and the selection and/or development of instruments designed to provide the information appropriate to the decision areas.

Collecting and analyzing the information are tasks of prime concern to the evaluator. He will encounter different problems associated with these tasks, depending upon the unit being evaluated, the nature of the decision-maker and other considerations.

One of the most vital parts of the evaluation process is reporting summary data to the decision-maker. Most evaluators often overlook this function as being merely a perfunctory exercise. The evaluator's role requires that he make judgments about the relative worth of various courses of action. These judgments may be in the form of statements or recommendations to the decision-maker(s), or may be general descriptive material. But in all instances the evaluator should attempt to be explicit in the specification of the value system that led to the judgments made. Indeed, if the purpose of evaluation is to provide information that will enable decision-makers to reach decisions about alternatives, then the nature and form of the reporting should be appropriate to the problem and the audience.

The summary data is provided to be of use to the decision-maker. It has already been alluded to in this paper that the term "decision-maker" is used to apply both to an explicit contractor of evaluation services as well as a potential but only implicit decision-maker or group. Moreover, the term "decision-maker" is used to apply both to an individual with organizational "line" authority (e.g., a school principal) as well as to other people that participate in the decision process or in the development of educational policy decisions. Throughout this paper, whenever we refer to "decision-maker" it is in the generic sense discussed above.

Information is provided to "decision-makers," in order to enable sounder decisions in selecting among alternatives. By definition, a "decision" involves making a choice among alternatives. However, the form of alternatives has a wide range. Alternatives may range from a "go no-go" category regarding a given textbook for a particular classroom to a complex aggregation of a number of budget categories related to an optimum expenditure level. In general, the number of categories of alternatives increases as the size of the program or system increases; e.g., pupil achievement, teacher morale, teacher practices, etc.

The summary evaluation data should ordinarily be presented in the form of statements and/or recommendations about alternatives. An exception would be when such information is designed to describe the status (past, present, or future) of the system. For example, information that indicates students in a certain school are weak in mathematics. In this instance, there are no alternatives and the decisions are implied (e.g., something should be done to correct this situation).

THE FIVE EVALUATION NEED AREAS

The foregoing definition and assumptions are closely tied to the decision-making process, which in turn leads to a consideration of what kinds of educational decisions require evaluative information. Inquiry along these lines has led to the development of a decision-oriented classification of the various types of evaluation. Five kinds or need areas of evaluation may be identified, and each is designed to provide and report information useful to a decision-maker in making judgments relative to decision categories. In other words, there are evaluations necessary in making decisions about (a) systems assessment, (b) program planning, (c) program implementation, (d) program improvement, and (e) program certification. Thinking related to the development and specification of these stages has drawn heavily from the work of Hemphill, Lumsdaine, Provus, Stufflebeam, and Skager.

Systems Assessment

Systems assessment is a means of determining the range and specificity of educational objectives appropriate for a particular situation. The needs may be represented as a gap between the goal and the present state of affairs. The evaluative problem then becomes one of assessing the needs of students, of the community, and of society in relation to the existing situation. Assessment, therefore, is a statement of the status of the system as it presently exists in comparison to desired outputs or stated needs of the system.

A systems assessment might be related to evaluation of a specific instructional program and thus the charge would be to determine the present status relative only to a specific objective and related objectives. This could be referred to as a "sub-system assessment."

Program Planning

Program planning, the second need area, is concerned with providing information which will enable the decision-maker to make planning decisions -- to select

between alternative processes in order to make a judgment as to which of them should be introduced into the system in order to fill most efficiently the critical needs previously determined. In an instance where we are proceeding through severe need areas in sequential fashion, the following might occur. After the decision-maker receives the systems assessment evaluation, he might make a decision as to the appropriate means of fulfilling that need. Alternatively, he might designate several possibilities and ask the evaluator to provide information on the possible impact of each. Hence, in program planning, the evaluator provides the data for an evaluation of a program prior to its inception. The task of the evaluator is to anticipate the attainment of goals and to assess the potential relative effectiveness of different courses of action.

Program Implementation

After the decision-maker has selected the program to be implemented, an evaluation of program implementation determines the extent to which the implemented program meets the description formulated in the program planning decision. In the case of an existing program where no known changes have been implemented, the evaluation task at this stage is to determine the degree to which planning descriptions of the program coincide with the implemented program and the extent to which assumed descriptions of inputs to the system (e.g., students) corresponds with observed inputs.

Program Improvement

The evaluator can play an important role in Program Improvement, the fourth need area, by providing as much information as possible about the relative success of the parts of the program. In order to perform program improvement evaluation, it is necessary to recognize the basically interventionist role that the evaluator has been asked to take. It is quite natural for the decision-maker to expect that as the evaluator identifies problems and collects and analyzes related information while the program is in operation, data relating to possible changes that could be executed within the system to improve the program will be presented to the decision-maker immediately.

This need area has often been overlooked or ignored by the traditional evaluator who has attempted to impose the antiseptic sterility of the laboratory on the real world. Such an approach may make for a fine experiment, but it does little to improve a program which is often not in its final form.

Program Certification

Finally, the fifth area of evaluation, Program Certification, must provide the decision-maker with information that will enable him to make decisions about the program as a whole and its potential generalizability to other situations. The evaluator might attempt to provide information which will enable the decision-maker to determine whether the program should be eliminated, modified, retained, or introduced more widely.

The kind of information collected for program certification decisions is in large part dependent upon who is the intended decision-maker. It is obvious that different information will be required if the potential decision-maker is the teacher, the principal, or a funding agency. Evaluations in this area will be concerned with examining the extent to which the objectives have been achieved, as well as with the impact on the outcomes of other programs.

In program certification evaluations, there is a requirement for valid and reliable data which would generally require that the evaluator attempt to apply as rigid a set of controls as possible. The evaluator might use pre- and post-test designs and employ sophisticated methods for analyzing the data. Intervention should be avoided in evaluations in this need area. Here the traditional evaluator is "at home."

EVALUATION SYSTEMS AND PROGRAMS

The Center has made a distinction between the evaluation of educational systems and the evaluation of instructional programs. In terms of the conceptual framework that has been presented, one can view the evaluation of instructional programs as involving the last three evaluation areas.

In evaluating any educational system it is necessary to determine the educational needs in terms of the most appropriate objectives for the given system and to devise a procedure for providing regular information on the progress of the system relative to these dimensions. This procedure is the evaluative device for decision-making about the assessment of system needs (Systems Assessment). When decisions have been made about the objectives of the system which are inadquately met, the decision-maker might then be concerned with the selection of programs to meet these objectives. Evaluation information might be sought relative to the possible impact of various courses of action or programs (Program Planning).

Thus, if one followed through on the full cycle of evaluation in an educational system, including the allowance of feedback and recycling, the process might be depicted as in Figure 1.

(See Figure 1 next page)

Figure 1

Evaluating Educational Systems

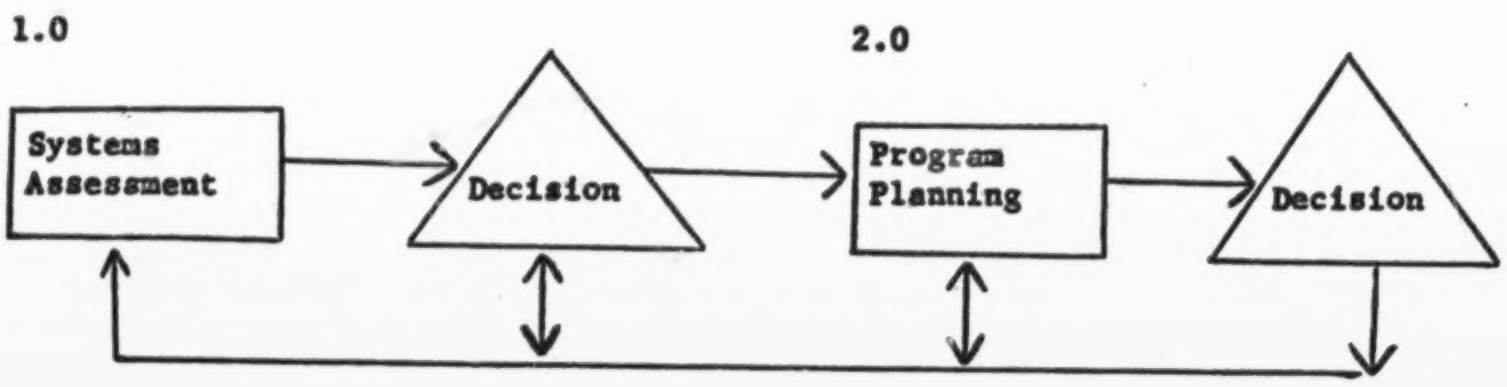
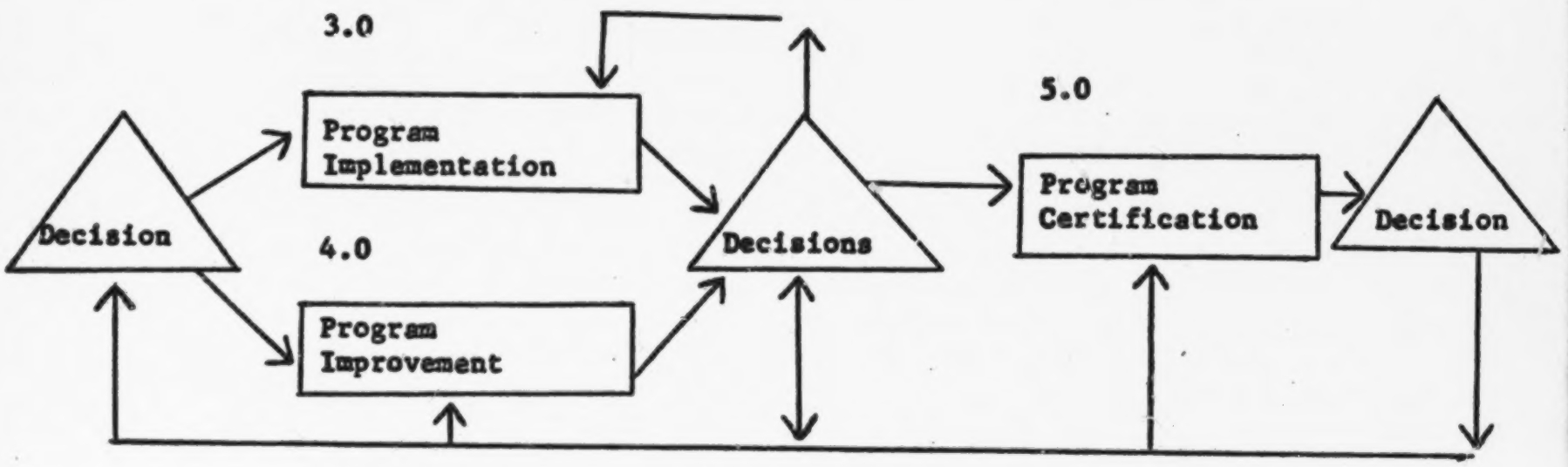


Figure 2

Evaluating Instructional Programs



The evaluation of an instructional program assumes the prior assessment of the program or of a larger system, a decision about objectives to be attended to, and the selection of programs considered to be appropriate for meeting these objectives. That is, the evaluation of an instructional program ordinarily begins after the decisions related to need areas 1 and 2 of the evaluation have been made. In evaluating an instructional program, the objectives to be achieved and the program which it is assumed will be most successful in achieving these objectives are generally considered as "given." Thus, the evaluation of an instructional program focuses primarily on the last three need areas of evaluation.

Where the evaluation task commences with the evaluation of the instructional program, the necessity is envisaged for a sub-system assessment dealing with the area of concern of the selected instructional program. Thus, it is seen that the evaluation needs areas are not necessarily sequential with the steps easily defined. In some instances, moreover, the data collection, analysis, and reporting appropriate to a decision might be so easy to obtain or so inextricably tied to the making of the decision that the decision-maker and his staff would perform the evaluation themselves. In some instances, the project begins for the evaluator after a number of decisions have already been made. Thus, the evaluator might have to attend to only selected evaluation need areas.

For the sake of convenience, Figure 2 depicts a way in which the evaluation need areas might be interrelated in the evaluation of instructional programs.

A final explanatory note is in order concerning the role of the evaluator in this evaluation model. It might be possible to draw the conclusion that the evaluator does all things -- that he is curriculum designer, administrator, program implementor, test officer, budget manager, etc. This is a misconception. This notion has been partially dispelled by our comment earlier that what has been described in this section is the full range of the evaluation cycle. Functions to be performed are being described rather than a role in each evaluation need area for a specific individual.

In an instructional program evaluation the evaluator is, first, concerned with providing information on program implementation and for program improvement. The appropriate information is related to the extent to which the program has been implemented in a manner compatible with that described in the program plan, and the extent to which the content described in that program design was portrayed accurately. In addition, the evaluator is concerned with providing information which may be used in modifying and improving the program. The decision-maker may wish to recycle areas 3 and 4 of the model any number of times in order to insure that benefits from program implementation and improvement are maximized.

COMMENTS REGARDING THE CORRIGAN-KAUFMAN PROBLEM SOLVING MODEL

Kaufman suggests that the six-step problem solving model as developed by Corrigan and Kaufman is an appropriate model for describing the educational management process and that it may be used as a referrent for identifying the various need

areas in the evaluative process. Both models belong to the family of systems approaches to education. Both models represent attempts to provide process models for educators to aid them in structuring their thrusts toward the goal of quantitative improvement of education.

The Corrigan-Kaufman model is presented as a comprehensive approach for the use of the educational manager or decision-maker. The evaluation model discussed is designed primarily for the use of the professional educational evaluator. This individual (or group) may or may not be the decision-maker as was pointed out earlier in the paper. The two models would appear to be complimentary and one could envision both models being employed in the same educational situation.

It should be noted that in the past, evaluation has been seen as a process that occurs only toward the end of a problem-solving model (such as the "Determine Performance Effectiveness" function in the Corrigan-Kaufman model). The case has been presented in this paper that evaluation needs to be considered as a comprehensive process that applies to all areas of decision-making in education.

If evaluation is concerned with providing information to the decision-maker that will help him to effectively choose between alternatives (as is argued in this paper), then this information is needed throughout the management process, not just at the end. Evaluation should begin when an educational agency first looks critically at the potential of the educational process in its particular system, not after all attempts at improvement have been concluded.

THE CENTER FOR THE STUDY OF EVALUATION

The Center for the Study of Evaluation, one of nine USOE R & D Centers, is a unique organization in that its efforts are devoted exclusively to the study of the evaluation of educational systems and instructional programs. After an initial period of exploration, the Center's activities have been increasingly focused on a relatively few research projects which fall within the scope of major program areas. This heavily programmatic approach to the search for a meaningful evaluation framework has led to the development of two major programs: a program on Evaluation on Instructional Programs and a program on Evaluation of Educational Systems. The Center is supporting one major project in the first program and two in the second.

In response to the kind of needs of the program on Evaluation of Instructional Programs, the Center has established the Project for Research of Objective-Based Evaluation (PROBE). This project has as its purpose the specification of behaviorally defined objectives across a broad range of subject areas and the development of test items related to these objectives. Further, the project will study the format of the objectives and devise procedures for their introduction which have the greatest impact upon the instructional programs and their outcomes. Products derived from this project will be useful to evaluators working in areas 3, 4 and 5 of the evaluation model.

Two current Center projects at the CSE at UCLA, the Elementary School Evaluation System and the Higher Education Evaluation Project, represent attempts at examining more complex educational systems (areas 1 and 2 of the model). Each

is designed to yield procedures for information collection analysis and reporting and to assist educational evaluators and decision-makers.

The Elementary School Evaluation Project is developing a "do-it-yourself" evaluation kit to help elementary school principals assess student performances across a wide range of concepts and skills, to interpret the results of this information, and to make valid decisions for improving performance levels. Included in the kit will be an "atlas of Norms" from which students' performance can be compared with that of other schools sharing similar factors, such as the socioeconomic status of the community, the region of the country, and the community's degree of urbanization.

The Higher Education Evaluation Project is developing a wide variety of measurement tools which administrators can use to evaluate both the long and short term effects of their institutions upon their students. At present the project is conducting a survey of students and alumni at more than 75 diverse colleges and universities located throughout the United States. The questionnaires used in the survey and a manual explaining their use and the various ways of interpreting the results will be made available to any institution interested in evaluating its own higher education program.

Thus, the products of these three major projects of the Center -- PROBE, the Elementary School Evaluation System, and the Higher Education Evaluation Project -- are designed to be of value in information collection analysis and in reporting within various dimensions of the five types of evaluation.

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